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An improved gene expression system to generate transgenic arabidopsis thaliana plants harboring a Bacillus ginsengihumi phytase gene

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Abstract

We constructed a new vector system for heterologous gene expression in Arabidopsis thaliana. The construct contains a codon-optimized sequence encoding Bacillus ginsengihumi phytase behind an inducible plant-specific promoter for expression in root epithelial cells. The new vector introduced into the plant A. thaliana by Agrobacterium mediated transformation. We obtained several generations of transgenic A. thaliana plants with integrated Bacillus ginsengihumi phytase gene, as well as with an empty vector as a negative control. We tested several transgenic plants harboring the phyCg construct under the control of phosphate-starvation inducible Pht1;2 promoter and show that the phyCg gene is expressed at the mRNA level. Further characterization of these lines of plants will help us to design an improved transgenic strategy for the development of a root-specific heterologous system for the expression of bacterial phytases in plants.

Keywords

Arabidopsis thaliana, Bacillus phytase, Pht1;2 promoter